OPERATING SUMMARY

WATERDOWN

WATER POLLUTION CONTROL PLANT

1973

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, CENTRAL REGION
P. Cockburn

MANAGER, UTILITY OPERATIONS
A. Thomas

WATERDOWN

WATER POLLUTION CONTROL PLANT

operated for

THE VILLAGE OF WATERDOWN

by the

MINISTRY OF THE ENVIRONMENT

1973 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

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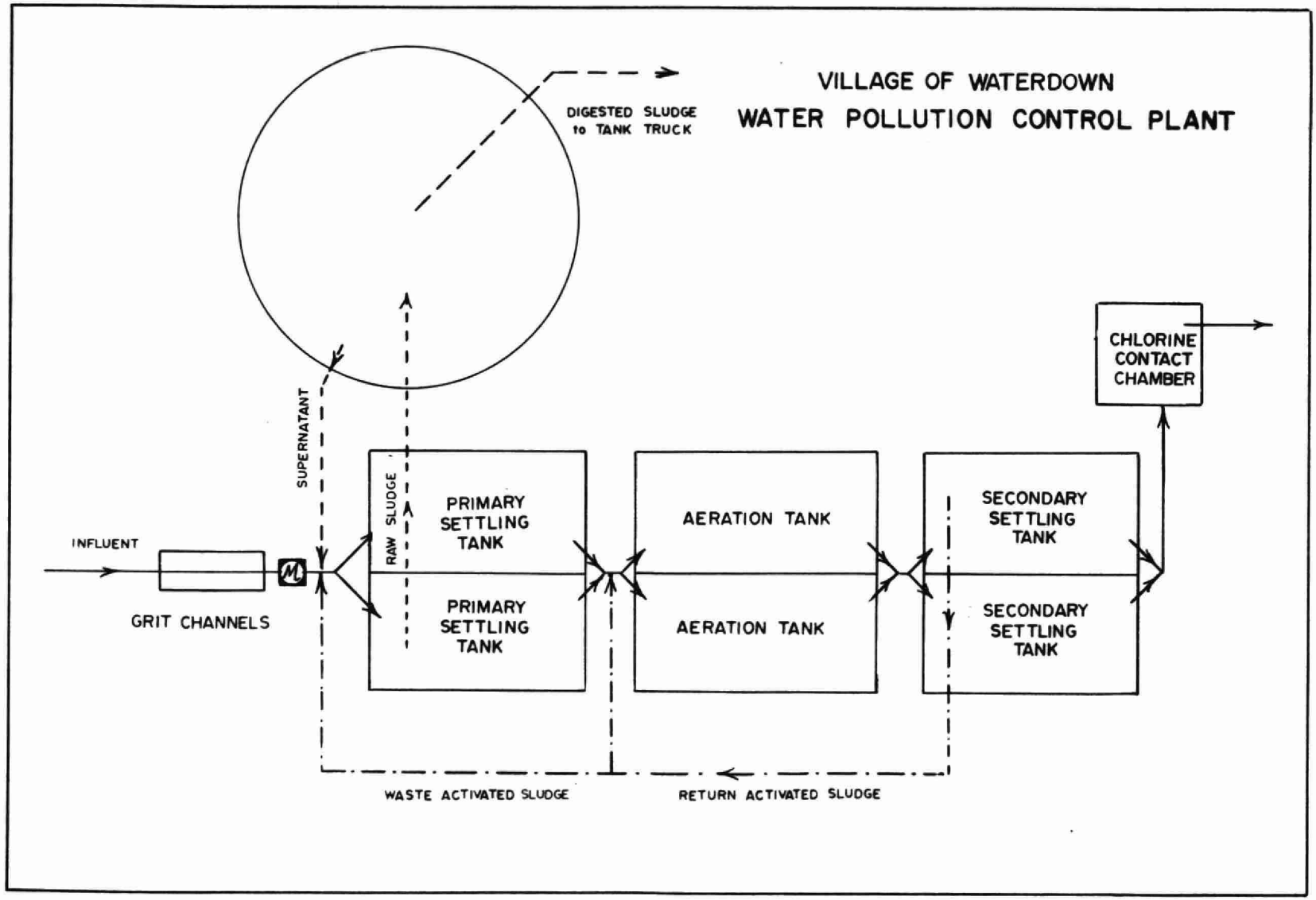

VILLAGE OF WATERDOWN
WATER POLLUTION CONTROL PLANT
DIGESTED SLUDGE to TANK TRUCK
CHLORINE CONTACT CHAMBER
SUPERNATANT
RAW SLUDGE
PRIMARY SETTLING TANK
PRIMARY SETTLING TANK
AERATION TANK
AERATION TANK
SECONDARY SETTLING TANK
SECONDARY SETTLING TANK
INFLUENT
M
GRIT CHANNELS
WASTE ACTIVATED SLUDGE
RETURN ACTIVATED SLUDGE

DESIGN DATA

PROJECT Village of Waterdown WPCP

PROJECT NO. 2-0163-63

TREATMENT Activated Sludge

DESIGN FLOW 0.30 mgd

PRIMARY TREATMENT

Screening

Type: Manually cleaned
Size: One 2" spacing

Grit Removal

Type: Channel, manually cleaned

Primary Sedimentation

Type: Walker Process CRP
Size: Two 30' x 8' x 8' (24,000 gal)
Retention: 1.9 hours
Loadings: Surface 625 gal/ft^2/day
Weir 6,520 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Diffused air, single-pass
Size: Two 50' x 14' x 11' (15,400 ft^3 or 96,000 gal)
Retention: 7.7 hours

Air Supply

Type: Aerzener Blowers
Size: Two 600 cfm

Diffusers

Type: Chicago Pump Discfusers
Spacing: 48 (total) @ 2' centres

Secondary Sedimentation

Type: Walker Process CR
Size: Two 30' x 8' x 11' (33,000 gal)
Retention: 2.6 hours
Loading: Surface 625 gal/ft^2/day
Weir 6,520 gal/ft/day

CHLORINATION

- One F & P 2-40 lb/day

Chlorine Contact Chamber

Size: 6' x 17' x 8'-9" (5,600 gal)
Retention: 27 minutes

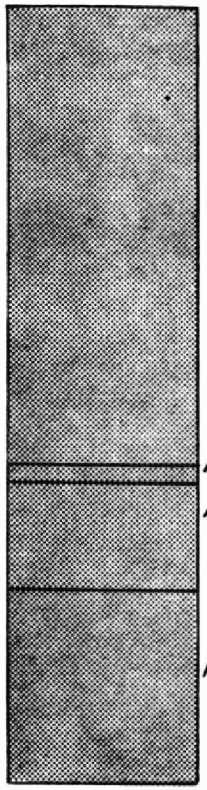
OUTFALL

- to Grindstone Creek

SLUDGE HANDLING

Digestion System - single stage
Type: Fixed steel cover, mixed by recirculation
Size: One 30' dia x 17' swd (15,100 ft^3 or 94,000 gal)

ANNUAL COSTS



1973 OPERATING COSTS

SALARIES & WAGES	58 %
EMPLOYEE BENEFITS	NIL
TRANSPORTATION & COMMUNICATIONS	2 %
SERVICES	13 %
SUPPLIES & EQUIPMENT	27 %
AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	NIL
TRANSFER PAYMENTS	NIL
OTHER TRANSACTIONS	NIL

YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS $/M.G.	UNIT COSTS ¢/lb BOD
1968	21.2	$ 12,065	569	23
1969	22.0	11,295	513	15
1970	16.6	14,985	562	26
1971	34.0*	15,921	468	20
1972	44.0*	10,898	384	24
1973	50.8*	15,399	302	24

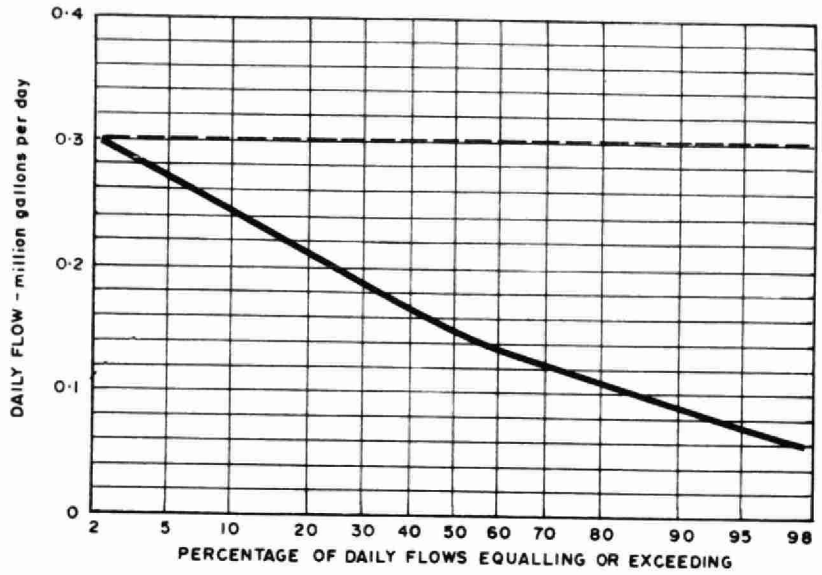
* Estimate

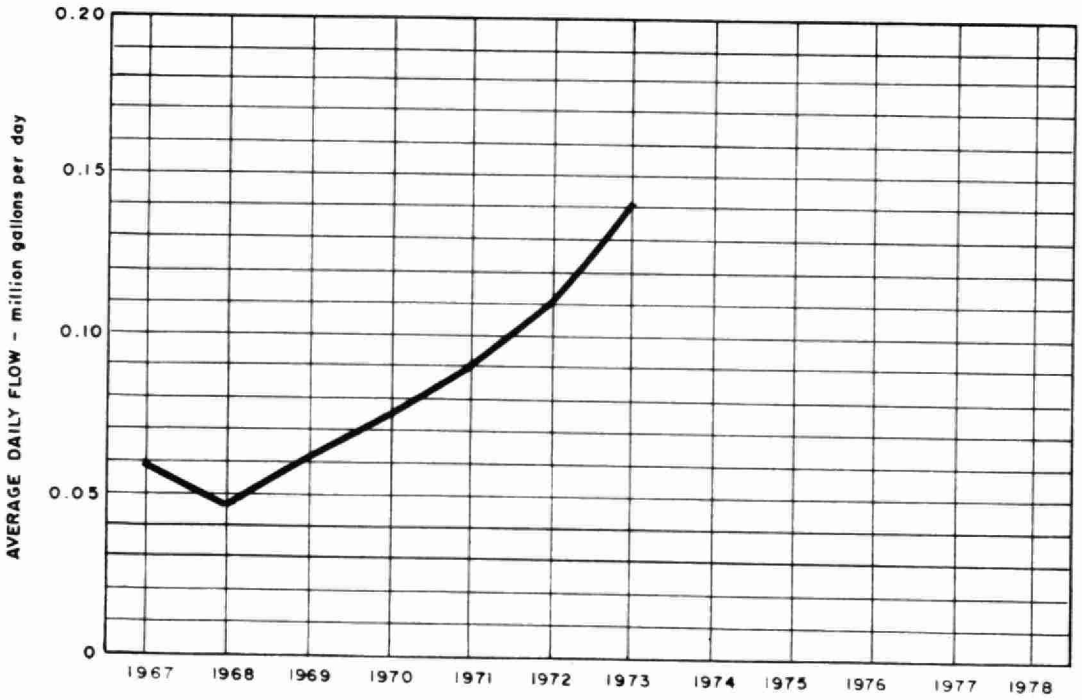
OPERATING EXPENDITURES

SALARIES AND WAGES	$8,897
EMPLOYEE BENEFITS	0
TRANSPORTATION & COMMUNICATIONS	288
SERVICES	2,037
SUPPLIES AND EQUIPMENT	4,177
ACQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	0
TRANSFER PAYMENTS	0
OTHER TRANSACTIONS	0
TOTAL	$15,399

PROCESS DATA

FLOWS





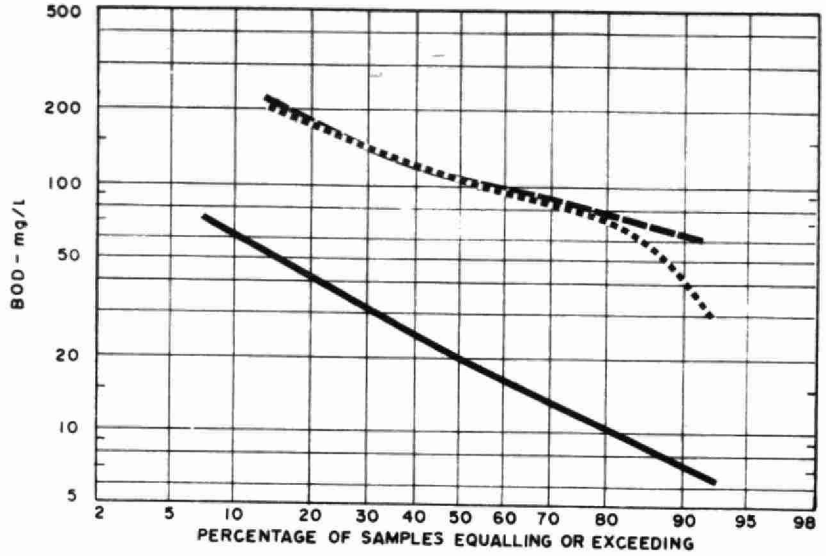
DESIGN CAPACITY 0.30 mgd

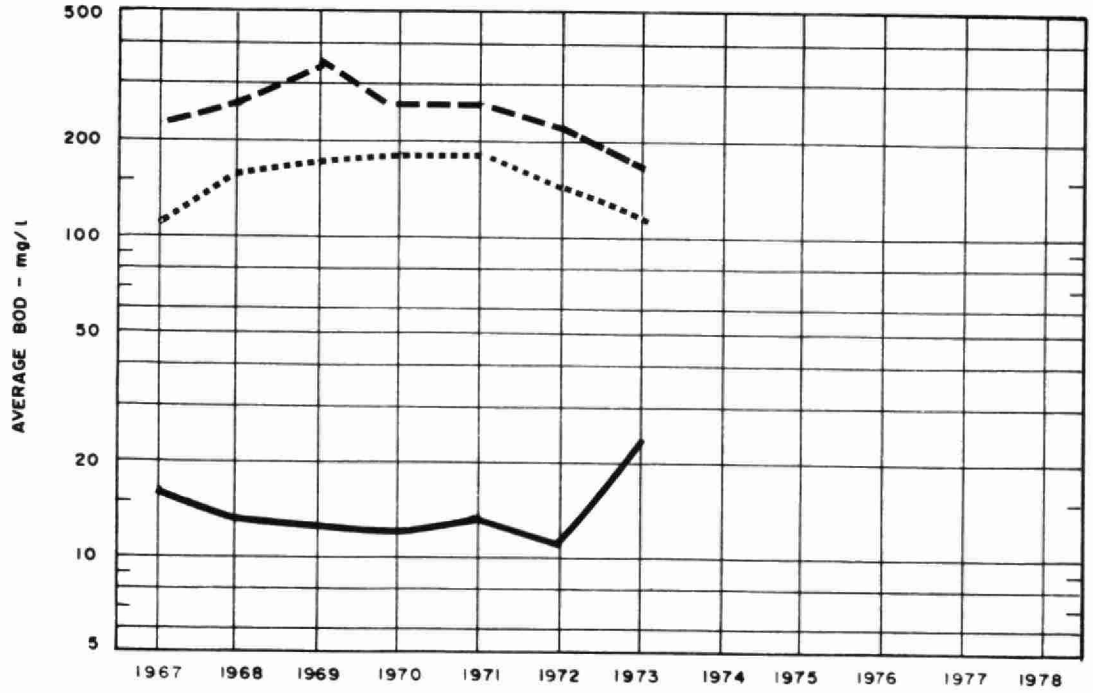
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10^3 pounds	mg/l	mg/l	%	10^3 pounds	mg/l P	mg/l P
JAN				90	32	64		130	15	88		8.0	7.3
FEB	2.3	0.08	0.11	240	16	93	5.1	330	16	95	7.2	14.0	7.0
MAR	5.6	0.18	0.35	95	8	92	4.9	120	12	90	6.3	9.5	3.6
APR	5.0	0.17	0.27	90	26	71	3.2	130	15	88	5.7	5.0	
MAY	4.3	0.14	0.19	95	26	73	3.0	300	14	95	12.2	5.9	4.2
JUNE	4.3	0.14	0.19					250	13	95	10.0		
JULY	4.9	0.16	0.19	280	12	96	13.2	260	18	93	12.0	7.9	4.0
AUG	3.4	0.11	0.18	170	28	84	4.9	410	13	97	13.5	7.6	5.3
SEPT	2.8	0.10	0.11	180	8	96	4.9	190	13	93	5.0	6.6	
OCT	3.7	0.31	0.37	140	24	83	4.2	160	15	91	5.4	8.6	
NOV	4.7	0.16	0.32	140	70	50	3.2	290	15	95	12.7	5.9	
DEC	5.5	0.18	0.32	150	10	93	7.7	150	15	90	7.4	4.2	0.9
TOTAL	50.8*	-	-	-	-	-		-	-	-		-	-
AVG.		0.14	MAXIMUM 0.37	150	24	84	5.4	240	14	94	8.9	7.6	4.6
No. of Samples	-	-	-	11	11	-	-	47	45	-	-	11	7

* Estimate

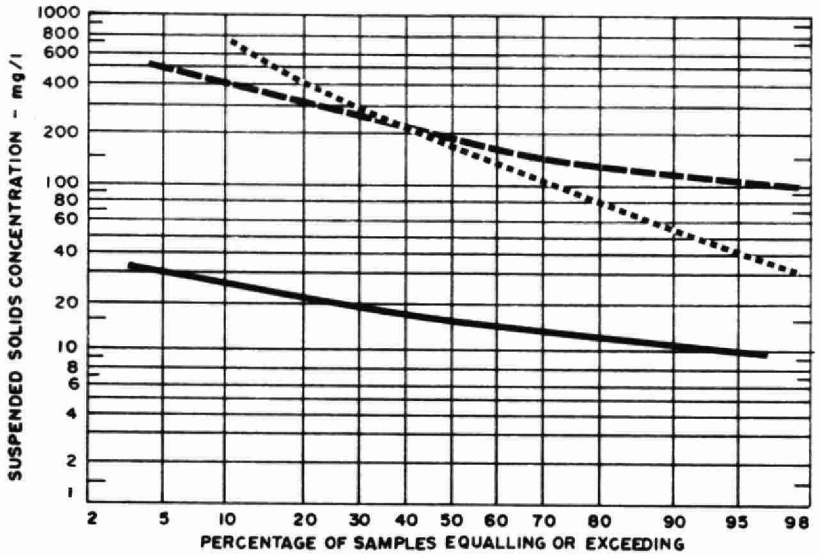
BIOCHEMICAL OXYGEN DEMAND

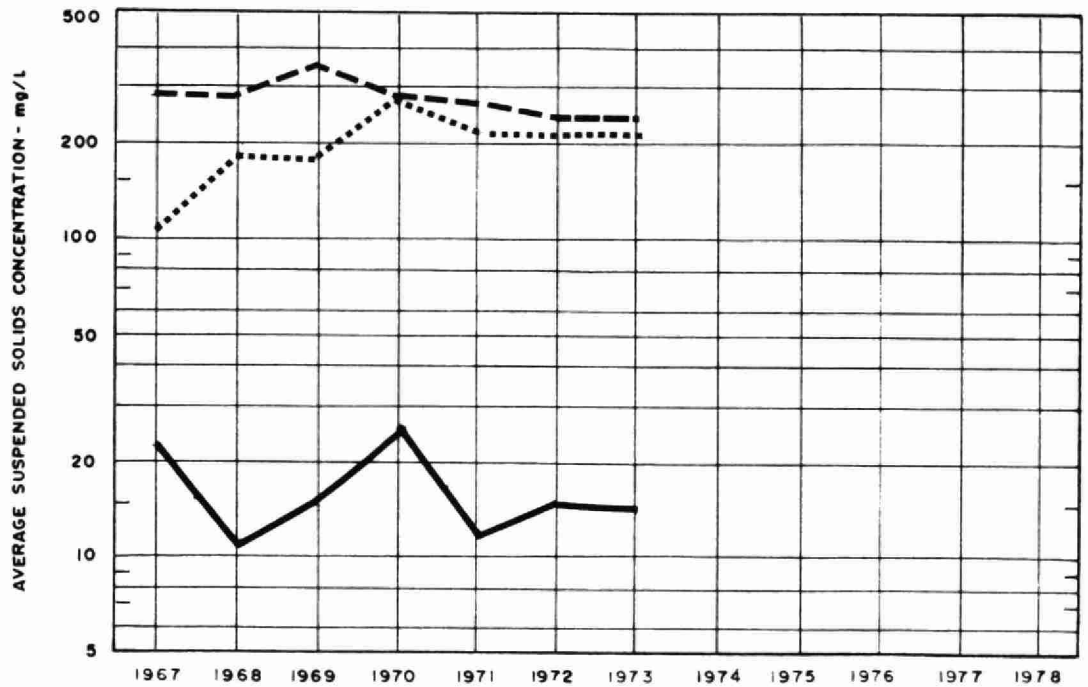




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

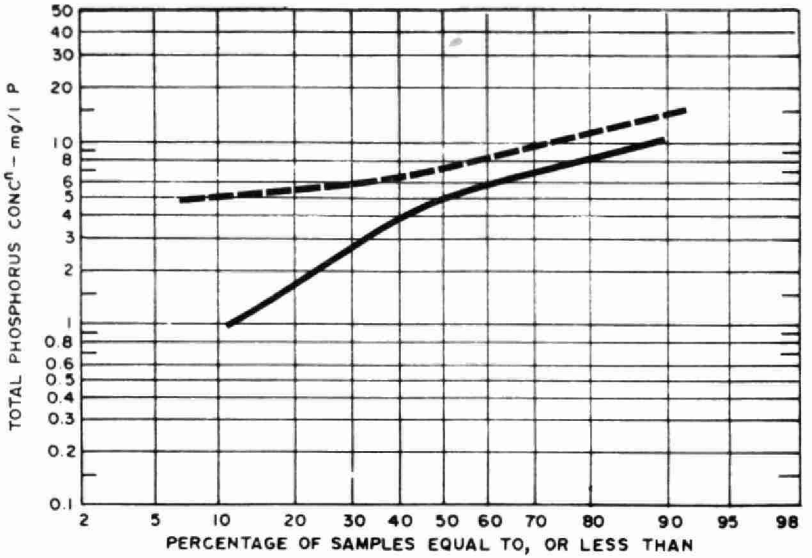
SUSPENDED SOLIDS

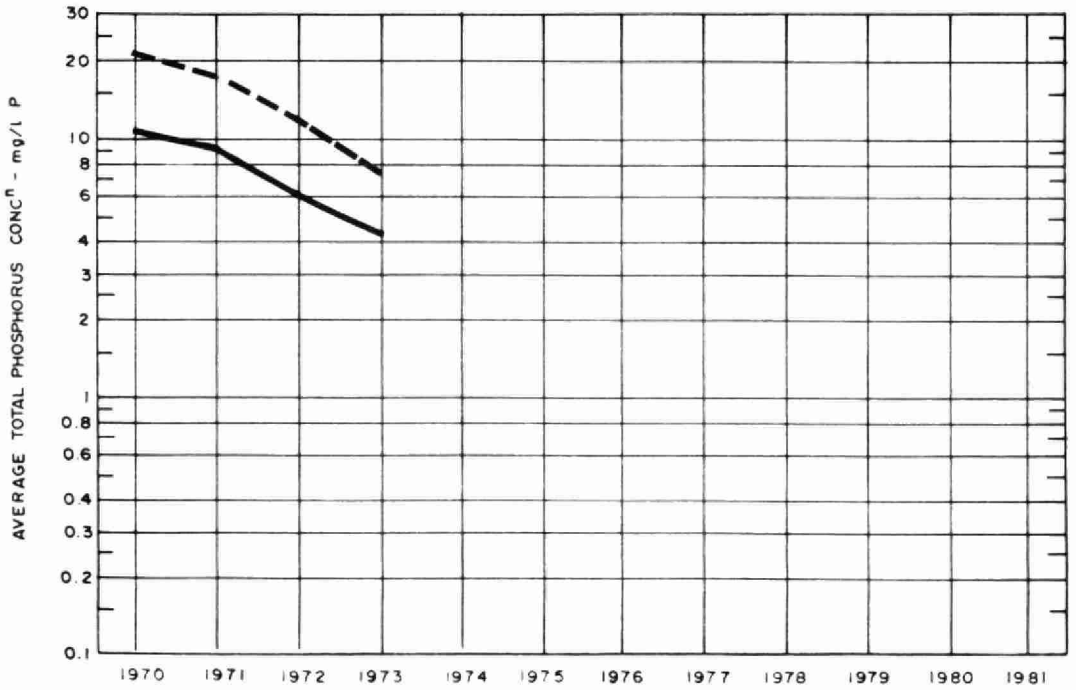




PLANT INFLUENT
PRIMARY EFFLUENT
PLANT EFFLUENT

PHOSPHORUS

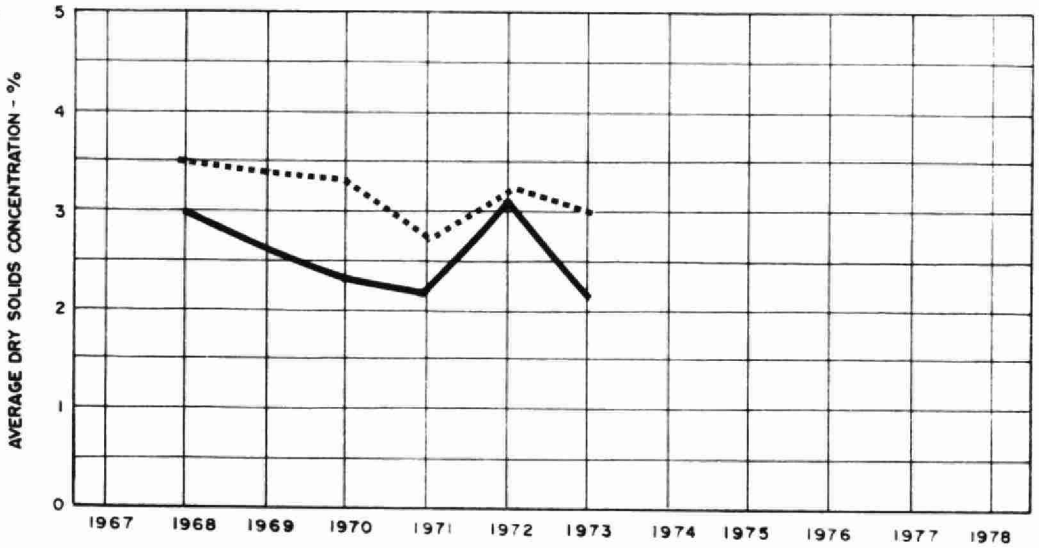


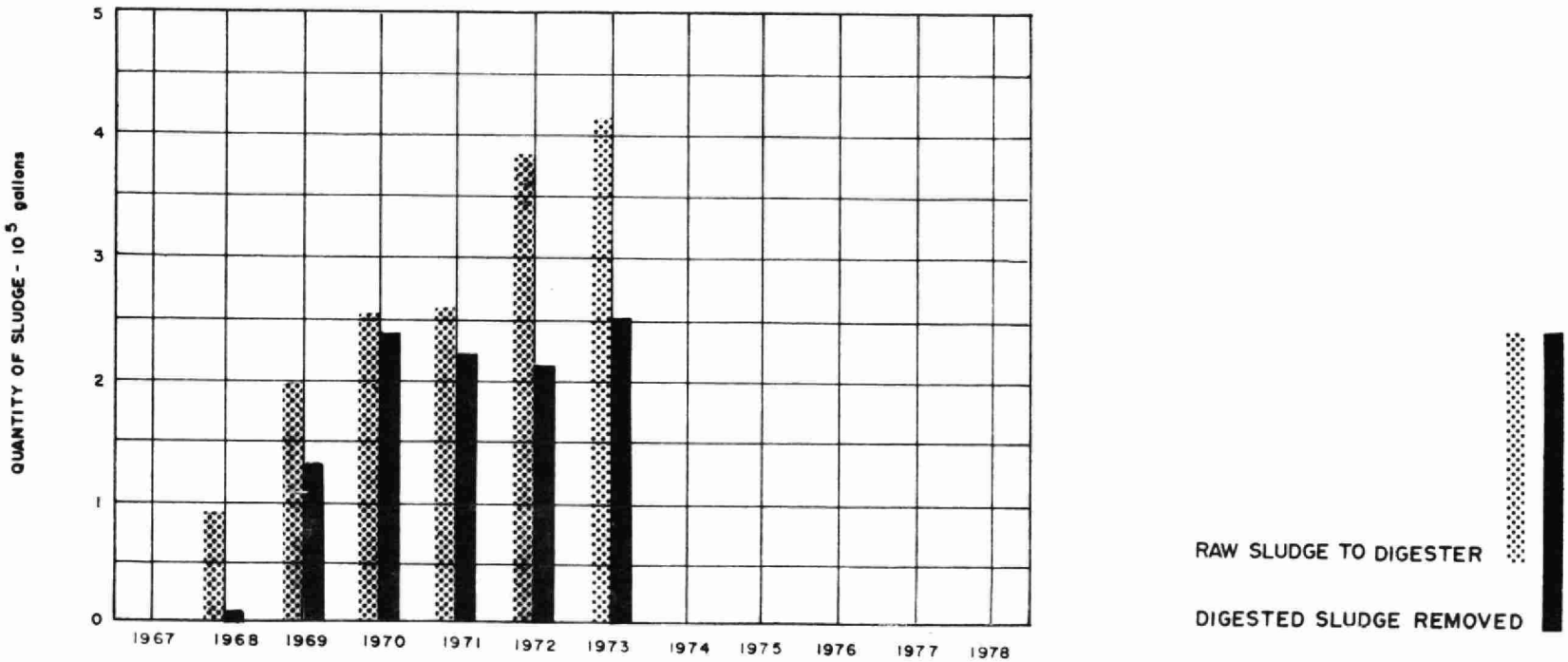


PLANT INFLUENT

PLANT EFFLUENT

DIGESTION


AVERAGE DRY SOLIDS CONCENTRATION - %
0
1
2
3
4
5
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE
DIGESTED SLUDGE


QUANTITY OF SLUDGE - 10^5 gallons
0
1
2
3
4
5
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED

TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
									RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT	
	QUANTITY REMOVED cubic feet	Cl_2 USED pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day^{-1}	AIR $\frac{1000\ ft^3}{lb\ BOD}$	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10^3 gallons	TOTAL SOLIDS %	VOL. SOLIDS %	T. S. %	AMOUNT HAULED cubic yards
JAN	12	403		120	150	1600			32	2.7	80	25	2.6		2.1	148
FEB	9	294	12.8	100	220	1500	0.08	12.0	27	2.7	80	25			1.4	148
MAR	22	464	8.3	85	110	1600	0.14	6.0	34	3.5	74	22			1.6	130
APR	11	570	11.4	80	110	1700	0.10	9.3	26	5.4	73	25			0.8	148
MAY	25	612	14.1	80	190	1400	0.02	11.0	30	2.6	79	16			1.0	93
JUNE	16	515	12.1		120	1700			30	2.8	82	16				93
JULY	7	414	8.4	100	210	1400	0.11	6.3	31	2.3	77				0.4	
AUG	22	463	13.4	110	110	1600	0.16	9.4	38	2.5	74	44	2.4	66	0.5	259
SEPT	19	410	14.4	36	120	2900	0.03	30.0	35	3.2	75	16	3.2		0.4	93
OCT	5	471	12.8	200	220	2000	0.25	4.0	40	2.1	82	19	2.4	65	0.2	111
NOV	11	1208	25.9	200	220	2000	0.25	6.5	37	2.4		22	2.0			131
DEC	9	526	9.5	280	390	3300	0.32	1.7	50	3.2		21	2.2			126
TOTAL	168	6350	-	-	-	-	-	-	410	-	-	251	-	-	-	1480
AVG.	3.3 cu ft/mil gal	529	12.4	120	210	1900	0.15	9.7	34	3.0	78	23	2.4	65	0.9	135